

**CALFED Bay-Delta Program Project Information Form
Watershed Program - Full Proposal Cover Sheet**

Attach to the cover of full proposal. All applicants must fill out this Information Form for their proposal. Failure to answer these questions and include them with the application will result in the application being considered nonresponsive and not considered for funding.

1. Full Proposal Title: Lower Putah Creek Watershed Assessment and Stewardship Implementation
Program

Concept Proposal Title/Number: 0128

Applicant: Rich Marovich

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2. Type of Project: Indicate the primary topic for which you are applying (check only one)

<input type="checkbox"/> Assessment	<input type="checkbox"/> Monitoring
<input type="checkbox"/> Capacity Building	<input type="checkbox"/> Outreach
<input type="checkbox"/> Education	<input checked="" type="checkbox"/> Planning
<input type="checkbox"/> Implementation	<input type="checkbox"/> Research

Type of Applicant:

<input type="checkbox"/> Academic Institution/University	<input type="checkbox"/> Non-Profit
<input type="checkbox"/> Federal Agency	<input type="checkbox"/> Private party
<input type="checkbox"/> Joint Venture	<input type="checkbox"/> State Agency
<input checked="" type="checkbox"/> Local Government	<input type="checkbox"/> Tribe or Tribal Government

Location (including County):

What major watershed is the project primarily located in:

☐ Klamath River (Coast and Cascade Ranges)
☐ Sacramento River (Coast, Cascade and Sierra Ranges)
☐ San Joaquin River (Coast and Sierra Ranges)
☒ Bay-Delta (Coast and Sierra Ranges)
☐ Southern CA (Coast and Sierra Ranges)
☐ Tulare Basin (Coast, Sierra and Tehachapi Ranges)

5. Amount of funding requested: \$ 1,273,025

Cost share/in-kind partners? ☒ Yes ☐ No

Identify partners and amount contributed by each: LPCCC (incl. volunteers) \$418,025

6. Have you received funding from CALFED before? ☐ Yes ☒ No

If yes, identify project title and source of funds:

CALFED Watershed Program -
Lower Putah Creek Watershed Assessment and
Stewardship Implementation Program

Proposal Number 0128
April 27, 2001

By signing below, the applicant declares the following:

The truthfulness of all representations in their proposal

The individual signing this form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or an organization)

The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the Watershed Program Proposal Solicitation Package and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in the Proposal Solicitation Package.

Richard A. Marovich

Printed name of applicant

Signature of applicant

1. PROJECT DESCRIPTION

Project Summary and Problem Statement

The Lower Putah Creek Coordinating Committee (LPCCC) and Putah Creek Streamkeeper, with Solano County Water Agency (SCWA) as administrator, seek support to continue implementation of a three-phase approach to restore ecosystem processes and aquatic and terrestrial habitats in the Lower Putah Creek Watershed, including lower Putah Creek and its tributaries. The Lower Putah Creek Watershed begins at Monticello Dam (Lake Berryessa) and continues 30 miles downstream to Putah Creek's confluence with the Yolo Bypass which carries Putah Creek's water to the Sacramento-San Joaquin Delta. Though the lower Putah Creek corridor represents one of the most extensive remaining tracts of high quality wildlife habitat in Yolo and Solano Counties, and is home to a unique assemblage of fish and common and special-status wildlife species native to the Central Valley, it suffers from substantial infestations by invasive weeds, eroding banks, habitat loss and degradation, flood-related impacts, non-point source (NPS) pollution, and other major problems. Lower Putah Creek offers a unique opportunity to experiment with watershed management regimes to optimize benefits to fish, wildlife, and other resources without compromising other watershed objectives. For instance, flows from the Solano Diversion Dam can be released at different times to optimize attraction flows for salmon and flows beneficial to resident native fish.

The three-phase process includes: Phase I (partially funded and underway): stakeholder facilitation and issue identification; Phase II: a comprehensive biological and physical resource assessment and development of a stakeholder-based Watershed Management Action Plan (WMAP); and Phase III: implementation of technically-defensible, sustainable, cost-effective restoration and enhancement projects. The project described in this proposal would continue the Phase I stakeholder planning process now underway for the mainstem lower Putah Creek and expand its geographic scope to include Pleasants Creek. Pleasants Creek is a major tributary of lower Putah Creek that is affected by extensive infestations of *Arundo* (*Arundo donax*), severe bank erosion, and substantial sediment losses that threaten the downstream resources of lower Putah Creek. The project would initiate and implement the Phase II comprehensive resource assessment of lower Putah Creek and its tributaries to run concurrently with and inform Phase I stakeholder decisions. The project would also implement the specific prioritized and urgent restoration and enhancement actions and continuing projects already identified or underway as part of Phase III. Additional Phase III projects will be identified through implementation of this project and will be implemented by future funding commitments anticipated to come from the LPCCC and other sources, including CALFED.

The expected outcome of this project would be a healthier, more intact stream system, providing high quality habitat for fish, wildlife and native plant species, and recreational and participation opportunities for the communities along the creek. The project would also enhance CALFED's goals and objectives, by increasing water quality in the Bay-Delta region. Primary work products from this project include a) a comprehensive stakeholder-based Watershed Management Action Plan (WMAP); b) an interactive, educational, internet-accessible map and database of resources, problem areas, and projects; c) a resource library; d) continuation and expansion of the successful Putah Creek Council Adopt-A-Reach community stewardship project; e) continuation and expansion of the LPCCC wildlife monitoring and enhancement project; and f) urgently-needed continuation and expansion of invasive weed removal, bank stabilization, and ecosystem restoration projects in lower Putah Creek and its tributaries.

The WMAP and Phase III implementation projects will complement and are consistent with CALFED programs for watershed, water quality and ecosystem integrity protection and improvements, and the CALFED programmatic EIR and Record of Decision (<http://baydeltawatershed.org>), the California Nonpoint Source (NPS) Program, and the federal Clean Water Act Program (CWAP). The infrastructure, support, and long-term funding and commitment for this project are all in place. An historic Water Use Accord, signed in May 2000, guarantees permanent flows for anadromous fish and ecosystem benefits, while satisfying municipal and agricultural water needs. The LPCCC and lower Putah Creek Streamkeeper office, formed in July 2000 following the signing of the Accord, have the strong support of all stakeholders to lead this stakeholder- and resource-based planning effort. They are backed by a permanent agreement with a 20-year renewable funding cycle that ensures the sustainability of all stakeholder-based watershed improvements. In addition, SCWA will donate all of its overhead costs for this program, greatly increasing the implementation ability of the funds. The actions of this WMAP are locally based and comprehensive, but will be coordinated with, and substantially contribute to, the development of several other programs and projects in the region, including the CALFED Watershed Program, the *Arundo donax* Eradication and Coordination Project (Team Arundo del Norte, CALFED-funded and contracted April 2001), the Yolo and Solano County Weed Management Areas (WMA), the Coordinated Watershed Plan and Implementation Model for Solano County (Ulati Resource Conservation District 2001 CALFED Watershed Program application), the Putah-Cache Bioregion Project of the University of California at Davis, and others.

Project Approach

The process and methodology for restoring the lower Putah Creek watershed can be broken down into the three distinct phases which are outlined below. A proposed scope of work is provided in Section 8, including the tasks and timelines for completion for each task and phase.

Phase I: Watershed Stewardship Program - Stakeholder Organizing and Facilitation. The LPCCC and SCWA propose to continue the Phase I CALFED-funded stakeholder planning process now underway for the mainstem lower Putah Creek watershed to run concurrently with the comprehensive resource assessment of lower Putah Creek and its tributaries described in Phase II, and to expand its geographic scope to include Pleasants Creek, a major tributary of lower Putah Creek that is affected by extensive infestations of Arundo, severe bank erosion, and substantial sediment losses that threaten the downstream resources of lower Putah Creek. Stakeholder organizing and facilitation began with formation of the LPCCC and continues with implementation of a CALFED-funded Stewardship grant. The grant was originally awarded to the Solano County Department of Environmental Management (SCEM) and is jointly implemented by SCEM, the LPCCC, and the Putah Creek Streamkeeper. Meetings began in March 2001 to solicit the involvement of local landowners and water users; planning agencies; local governments; conservation organizations; farmers; and other stakeholders, to discuss and resolve technical, economic, and regulatory issues, identify problems and restoration needs, and to develop a watershed strategy based on stakeholder input. Extension and expansion of Phase I would enable the stakeholder group to consider new knowledge and understanding of issues, problems and solutions gained through the comprehensive resource assessment; to help develop the WMAP; and to make decisions on projects to implement in Phase III.

Phase II: Comprehensive Physical and Biological Resource Assessment and Watershed Management Action Plan Development. A Watershed Management Action Plan (WMAP) will be developed that is consistent with CALFED watershed, water quality, and ecosystem restoration programs, and *California's Nonpoint Source Pollution Control Program*. Development of the WMAP will follow the three-tiered management approach under the Porter Cologne Act emphasizing self-determined cooperation of stakeholders. The WMAP will be developed through integration of stakeholder input from Phase I and a comprehensive watershed resource assessment conducted in Phase II. The comprehensive resource assessment will cover the 30 miles of Putah Creek riparian corridor and tributary corridors from Monticello Dam at Lake Berryessa to the confluence of the Toe Drain and Yolo Bypass. The assessment will aggregate existing physical and biological data into a common GIS database, augment the GIS database with an analysis of current low altitude aerial photographs and ground surveys, analyze these data relative to the issues identified in Phase I and result in a plan that provides priority ranking, locations, timelines and costs for ecologically-based and stakeholder-based management actions. A combination of aerial photograph analysis and field surveys will be used to develop an assessment of baseline conditions and long-term trends in water quality, fish habitat, vegetation community and associated wildlife habitat, sensitive resources, invasive weed infestations, erosion problems, trash problems, and other factors.

Phase III: Implementation of Urgent Watershed Management Actions and Further Development of Existing Projects. Watershed management actions will be undertaken in areas with substantial problems or concerns and for existing projects that require further planning and development. Problem areas requiring urgent attention include locations along Pleasants Creek and the mainstem Putah Creek channel where streambanks are destabilized, including sections where invasive weeds (i.e., arundo) have densely infested the channel and are leading to rapid lateral streambank erosion. Existing projects requiring further planning and development include the Putah Creek Council Adopt-A-Reach community stewardship program, the LPCCC wildlife monitoring and habitat enhancement project, and cleanup projects in lower Putah Creek and its tributaries. Implementation of additional future ecosystem restoration and enhancement actions will follow naturally from the convergence of stakeholder support from Phase I and the specific management actions identified in Phase II. The Watershed Management Action Plan will provide a blueprint for future grants to conduct specific watershed enhancement projects.

The following persons, organizations, and agencies are expected to be involved in implementing or supporting management measures, based on past involvement, support and/or expressed interests in improving the lower Putah Creek watershed: The Streamkeeper, professional consultants and contractors, the California Conservation Corps (CCC), community volunteers, non-profit conservation and community education groups (Putah Creek Council, Winters Putah Creek Committee, Team Arundo del Norte), prison crews, the US Army Corps of Engineers, the California Department of Water Resources, RWQCB, California Department of Fish and Game, California Department of Conservation, US Fish and Wildlife Service, Natural Resource Conservation Service, Yolo and Upland Resource Conservation Districts, Yolo and Solano Weed Management Areas, cities of Davis and Winters, counties of Yolo and Solano, SCWA, Solano Irrigation District, UC Davis, and others.

2. Qualification and Readiness to Implement the Proposed Project

a) Administration of Funds

The fiscal agent for this project will be the Solano County Water Agency (SCWA). The agency has adequate support staff and is very experienced in handling similar large contracts. The LPCCC, Putah Creek Streamkeeper, and the Solano County Department of Environmental Management (SCDEM) are jointly overseeing implementation of the CALFED-funded Putah Creek Stewardship Grant originally awarded to SCDEM. SCWA has reviewed the terms and conditions provided with the Proposal Solicitation Package for this proposal and agrees to comply with all terms and conditions set forth in that package. Project management and oversight of all aspects of the project will be provided by the Putah Creek Streamkeeper. The Streamkeeper is experienced in the coordination of multiple events and very familiar with issues pertaining to the creek. The Streamkeeper is also personally known by the majority of landowners, both public and private, along the creek. Several landowners have requested his help in dealing with issues pertaining to the creek including weed abatement and trash removal. The Streamkeeper position was derived from the historic Putah Creek Accord. The Streamkeeper has a permanent office, computer, support staff and long term funding, Streamkeeper hours will contribute matching funds to this proposal. The Streamkeeper will be supported by the LPCCC and professional consultants, as described below.

b) Technical Support

A variety of technical support is available for this project. A professional environmental consulting firm (EDAW) will be retained to provide environmental compliance and permitting services for the implementation projects proposed during Phase III of this project. EDAW is a multidisciplinary firm specializing in environmental compliance, ecological restoration, and design. EDAW will also aid in the watershed assessment, compilation of data on natural resources along the creek, and development of protocols for weed abatement and habitat restoration and will be available to provide other contract services as requested by the Streamkeeper and the LPCCC.

Other technical support available includes multiple specialists from the University of California at Davis, specializing in environmental toxicology, fisheries, wildlife managements and GIS. Office space and equipment for project administration, technical tasks and the physical library of watershed information is provided at the facilities of SCWA in Vacaville. A website that will be used to publicly post data gathered during the assessment of physical and biological resources in the watershed is currently being developed by the Streamkeeper (see www.putahcreek.org) and is housed by Davis Community Network (DCN).

Low altitude high resolution color aerial photographs of the entire watershed planning area including Pleasants Creek and other tributaries were commissioned by SCWA and recently flown in April, 2001. Higher altitude georectified images are being commissioned by SCWA and will be available in June 2001. The low altitude images were timed to capture the optimal identification signature of *Arundo* in the understory before overstory deciduous trees leafed out, and tamarisk (*Tamarix* sp.) during its peak blossoming period. These aerial photographs will be available to begin mapping of physical and biological resources in the watershed immediately following the award of a contract.

c) Previous Projects

Stakeholder organization and facilitation began with the formation of the LPCCC and continues with joint implementation of a CALFED-funded Stewardship Grant by the Solano County Department of Environmental Management, the LPCCC, and the Putah Creek Streamkeeper. This process is currently underway and will be continued as part of the proposed project. The model will be expanded to include stakeholders in the Pleasants Creek watershed. Goals and objectives developed during these meetings will provide the basis and feedback for the work proposed in Phases II and III. A separate CALFED grant awarded to Team Arundo del Norte was recently contracted and is underway in the watershed.

EDAW has successfully provided environmental compliance and permitting services as well as developed restoration plans and other management plans and provided public outreach and project management services for a wide variety of projects throughout California.

Restoration efforts and creek cleanups along Putah Creek have been underway for many years and take place on a regular basis. These efforts are organized by various groups and organizations including the Putah Creek Council, Putah Creek Committee, Adopt-a-reach project, UC Davis groups and many other entities. Strong community support for the local creeks and the overall watershed has been continuously demonstrated by local schools, church groups, boy scouts and others.

3. Budget, Including Matching Funds and Compliance with Standard Terms and Conditions

Budget

A detailed budget, by phases and tasks, is included at the end of this proposal package as Table 1. It includes information on all equipment, materials, professional and volunteer hours, and all deliverables for this project. It also identifies requested CALFED and matching funds. Environmental compliance and permitting costs are included in the budget. The budget was developed based on current hourly billing rates for the Putah Creek Streamkeeper, professional consultants and facilitators, implementation contractors, and student interns. It is also based on current equipment rental costs and other direct costs.

Matching Funds

The LPCCC will contribute \$418,025 in matching funds as provided in Table 2, below:

Table 2. Matching Funds.

Task	Streamkeeper Position ¹	LPCCC Fish Monitoring Fund ¹	LPCCC Vegetation Management Fund ¹	Volunteers	Grand Total
A-1-1	\$60,000				\$60,000
A-2-1	\$6,000				\$6,000
A-2-2	\$2,000				\$2,000
A-2-3	\$600				\$600
A-2-4	\$2,400				\$2,400
PI-1	\$10,000				\$10,000
PII-1		\$110,000			\$110,000
PII-2			\$8,205		\$8,205
PII-3	\$2,500				\$2,500
PII-4	\$4,000				\$4,000
PII-5	\$5,000				\$5,000
PII-6	\$5,000				\$5,000
PIII-1		\$10,000			\$10,000
PIII-2	\$30,000				\$30,000
PIII-3				\$60,000	\$60,000
PIII-4				\$57,320	\$57,320
PIII-5				\$45,000	\$45,000
Total					\$418,025

¹ These funds are committed by the Putah Creek Accord administered by the Solano County Water Agency.

Compliance with Standard Terms and Conditions

The LPCCC and Solano County Water Agency (SCWA) have reviewed the terms and conditions provided with the Proposal Solicitation Package for this proposal and agree to comply with all terms and conditions set forth in that package.

4. Technical Feasibility

a) Similar Projects

Successful riparian restoration and enhancement projects similar to those proposed for Phase III of this project have been underway along Putah Creek for many years and Putah Creek improvement measures already serve as a model for other watersheds. The Ulati Resource Conservation District has expressed interest in using the Putah Creek model as an example and pilot project for the development of their countywide watershed assessment currently also seeking funding from CALFED. The San Francisco Bay Institute regards the Putah Creek Water Use Accord as a model to serve in determining water allocations for the San Joaquin River.

Development of the WMAP and the Putah Creek Website will provide all interested parties with an easily accessible platform to announce upcoming projects and will facilitate the planning and implementation of Putah Creek watershed management actions. It will also help in disseminating information about successful restoration and habitat enhancement methods, equipment availability, sources of habitat restoration materials (e.g., plants, seeds, mulch), and upcoming events that the community can participate in. Implementation of this project would help to organize and synergize various watershed management actions into a watershed-focussed, stakeholder-based and technically-feasible approach that will benefit the entire Putah Creek watershed and may assist other watershed groups.

Watershed assessments are currently successfully underway in many watersheds throughout the state. During the development of the WMAP for Lower Putah Creek, the Streamkeeper will coordinate with other watershed groups in the region, including the Ulati Conservation District. He will also coordinate with CALFED on effective approaches that may be available as models from throughout the state. Successful strategies and methods will be shared among interested parties to streamline and coordinate efforts and to leverage available knowledge. Data collected in Phase II will be immediately available through internet database applications.

b) New Approaches and Methods

The proposed project will include a comprehensive assessment of physical and biological resources of the lower Putah Creek watershed. As such, it will greatly enhance the knowledge of common and sensitive resources along the creek and close existing data gaps. The interpretation of up-to-date low altitude, high resolution color aerial photographs and black and white ortho photographs for mapping vegetation communities and habitat types in combination with ground truthing using GPS equipment will result in an up-to-date highly accurate dataset. The compilation of the GIS database will facilitate overlaying this data with existing land use maps, soil data, parcel maps and other layers, which in turn will facilitate future planning and management efforts in the watershed. Special-status species and sensitive natural community occurrences documented during the field surveys conducted as part of the comprehensive watershed assessment in Phase II will be reported to the California Department of Fish and Game's Natural Diversity Database (only with landowner consent if these occurrences are on private land) and will therefore be available for future local and regional resource management planning efforts, including habitat conservation planning.

All data compiled and collected during the watershed assessment (except sensitive data such as special-status species occurrences on private property or cultural resource sites) will be publicly available on the Putah Creek website and therefore be accessible to interested parties, including researchers, planners, school groups, stakeholders, and citizens. This will assure a high degree of "publicity" of work products and thus results in "public monitoring" of work progress. The website will also allow participating stakeholder to "upload" information therefore becoming a new avenue for communication and knowledge exchange. Quarterly progress reports submitted to CALFED and the LPCCC will further ensure accountability for progress made on the WMAP and implementation projects.

c) Maintenance of Finished Products

The WMAP will be available electronically on the Putah Creek website, and hardcopy versions will be distributed to CALFED, the LPCCC, stakeholders, and other interested parties. As projects identified in the WMAP are implemented, information on these projects can be added to the site as it becomes available. The physical library of watershed data will be housed at the Streamkeeper's office at SCWA headquarters in Vacaville, which is ensured long-term funding through the LPCCC, and also in local public libraries.

Any restoration and habitat enhancement project initiated or implemented during Phase III of the proposed project will likely be maintained in the long term as permanent flows in Putah Creek have been ensured by the Putah Creek Accord. Restored sites are expected to become self-sustaining in the future as they mature and “tap” into existing groundwater resources.

The historic settlement also ensures an annual LPCCC budget of \$ 160,000 through 2020 after which it can be renewed. Putah Creek restoration and protection also has the long-term commitment of its stakeholders. Stakeholders involved in the development and implementation of the WMAP include the cities of Davis and Winters, and the University of California at Davis, which all own protected riparian preserves along Putah Creek; the counties of Yolo and Solano, whose residents depend on the creek for their livelihood; and water agencies, municipalities, and farmers that depend on clean water from the lower Putah Creek watershed’s Lake Solano for drinking water and irrigation needs; and conservation organizations including the Winters Putah Creek Committee, the Dry Creek Citizens Committee, and the Davis Putah Creek Council which includes several hundred members and has actively advocated for the protection and restoration of Putah Creek.

5. Monitoring and Adaptive Management

Putah Creek has perpetual funding for monitoring of fish and wildlife secured through the Putah Creek Accord. Beginning this fiscal year (2001), the LPCCC has committed \$110,000 per year to fish and wildlife monitoring indexed to inflation for 20 years (renewable thereafter with subsequent water contracts). The Putah Creek Streamkeeper performs routine monitoring of lower Putah Creek, including monthly inspections by canoe and daily monitoring of flows at multiple Accord compliance points downstream of Lake Solano.

a) Performance Measures

Performance measures for each task have been developed in the form of deliverables by task as identified under Section 8 above. These deliverables ensure accountability for each of the tasks funded under this proposal. Quarterly progress reports will also be provided to CALFED and the LPCCC and will provide insight into progress made and tasks accomplished. For resource specific monitoring, monitoring protocols will be developed in cooperation with U.C. Davis specialists in fisheries biology, wildlife biology and vegetation management. Aerial photographs will be used to document baseline conditions.

b) Coordination With Other Local and Regional Monitoring Efforts

Standard databases (e.g. DWR fisheries database, NDDDB for listed and special status species) will be emulated so that data collected will comply with existing standards. For invasive weeds, we will cooperate in the development of a Team Arundo database, for other weeds, we will work with CDFA weed management areas on prototype Internet databases (like the citizen scientist prototype). We will utilize Internet accessible databases (see section "c" below) in cooperation with Davis Community Network (DCN) for efficiency in data collection and dissemination. The Streamkeeper will work closely with the Ulatis Resource Conservation District who is proposing and countywide watershed assessment for Solano County and is interested in using the Putah Creek Watershed Assessment as an example or pilot project.

c) Citizen Monitoring

Citizen scientists will be encouraged to participate in monitoring through a map-server-like Internet database application. A demonstration for storage and retrieval of citizen scientist data (e.g. reporting of invasive weeds) is available on our DCN web site (<http://www.putahcreek.org>). Opportunities for citizen monitoring will also be available for several implementation projects along the creek including riparian restoration currently underway as part of the adopt-a-reach project, wildlife enhancement project, fisheries monitoring project, and others. Citizen monitoring opportunities will also be posted on the Putah Creek website and will be announced in local media. Opportunities for local school groups to participate in citizen monitoring efforts will also be announced to local teachers.

d) Monitoring Protocols

Monitoring protocols will follow established standards where available. This fiscal year, the LPCCC reserved \$20,000 for review of historical data on the fishery and compilation of the data into a standard database patterned after the DWR fisheries database. All subsequent data will be collected and stored in this standard format. A similar database is planned for wildlife monitoring along Putah Creek and is currently being developed under the leadership of Melanie Truan (UC Davis wildlife biologist and Putah Creek Council board member). Occurrences of special-status species and sensitive natural communities will be documented on NDDDB database forms to facilitate entry into the statewide database. Annual photo documentation from permanent photo points will be conducted for implementation projects like riparian restoration and stream stabilization.

e) Data Collection and Analysis

Data collected during the watershed assessment will be compiled into a GIS database and will be publicly available on the Putah Creek website. It will therefore be readily accessible to interested parties, including researchers, planners, school groups, stakeholders, and citizens. The availability of this data will facilitate future planning and management efforts in the watershed. Special-status species and sensitive natural community occurrences documented during the field surveys conducted as part of the comprehensive watershed assessment in Phase II will be reported to the California Department of Fish and Game's Natural Diversity Database (only with landowner consent if these occurrences are on private land) and will therefore be available for future local and regional resource management planning efforts, including habitat conservation planning. Internet data entry and retrieval forms (as exemplified in "c" above) will be used to maximize participation and

access to current information. These databases will track landowner permissions and inform decision making on cleanup locations, invasive weed control, habitat enhancement, etc.

f) Adaptive Management

Adaptive management strategies will be used to ensure an efficient use of funds and resources. For example, if early stakeholder meetings reveal the need for additional data collection in order to achieve certain objectives, the suggested timeframe and priority list of data collection may be modified in order to be able to proceed with certain planning efforts; if early monitoring of restoration sites reveal that the site is not as successful as expected, possible causes of the failure will be investigated and remedial actions will be taken to influence the development of the site; if certain efforts in bank stabilization or trash removal prove too time consuming or costly, alternative methods will be sought and implemented. Coordination with other watershed groups will ensure that lessons learned in one watershed will be applied in another and that funds available will be managed for the maximum benefit of the watershed and the objectives of CALFED.

Adaptive Management Applied To Fisheries Enhancements (Peter B. Moyle):

Adaptive management (AM) is widely touted as the best approach for managing regulated streams but there are few examples of it being successfully employed. In Putah Creek, we have an unusually good opportunity to apply principles of AM and make it work. The basic idea is to:

1. State the problem and possible management actions to solve it
2. Develop a conceptual model of the preferred management action and how it should work. This can be viewed as equivalent to a hypothesis for an experiment.
3. Test the model with a pilot experiment
4. Monitor the system carefully to see how well the experiment works
5. If it works, repeat the action for several years, with monitoring
6. If it doesn't work, go back to step 1, 2, or 3 to modify the action
7. Once a successful series of pilot experiments has been completed, conduct a larger scale experiment and/or adopt a flexible management strategy that accounts for variation in the system.

Example: Attracting salmon to Putah Creek [simplified]

1. We want to restore a small run of fall chinook to Putah Creek. An important part of this is attracting adult spawners into the creek.
2. To bring the fish up from the toe drain, barriers have to be removed and a flow pulse provided when adults are present, typically in November.
3. In early November, 2000, a 5 day 50 cfs release from Putah Diversion Dam was coordinated with removing the boards from the irrigation diversion in the by-pass.
4. No adults were seen anywhere in the creek, although monitoring was not systematic. Early checks (week of March 12) have failed to produce juveniles. If this pattern continues, the experiment will have to be considered a failure [go to 6].
- 6A. Potential reasons for failure
 - a. flow release too early (salmon not ready to come up)
 - b. flow release too small
 - c. other barriers exist
 - d. competing flows from Cache Creek and Willow Slough overwhelmed Putah Creek flows
 - e. combination of a-d.
- 6B. Suggested experiment for 2001

Wait until at least Nov. 15 before releasing water and removing boards. If there are no natural high flows down Putah Creek, condition actual board removal and flow releases on low flows coming out of Willow Slough and Cache Creek. Make sure there are no additional barriers upstream (e.g., farm road crossing).

6. Watershed Conservation, Maintenance and Restoration

a) Assessments Completed Along Lower Putah Creek to Date

In 1993, the USFWS completed a reconnaissance level survey of Putah Creek documenting locations of plant communities and invasive plants, especially *Arundo*, *Tamarisk*, *Ailanthus* and *Eucalyptus*. The reconnaissance survey utilized aerial photographs and ground truth surveys but without the benefit of GIS or GPS. The resulting maps have been more-or-less fitted to GIS layers but are typically off by approximately 100 feet when compared to standard GIS data sets like digital ortho quarter quads (DOQQs). Due to these errors and the age of the survey, the data are not currently suitable for quantitative analysis. However, because the data was captured in the same year as the DOQQs, the data could be salvaged by visual comparison and alignment of each habitat polygon with the corresponding shape on the DOQQs, providing a 1993 baseline on habitat and invasive plant conditions that would be suitable for quantitative analysis. Updating this survey is one of our assessment objectives.

SCWA has contracted for electrofishing and wildlife monitoring reports to document the biological diversity of Putah Creek. Professor Peter Moyle has performed fisheries monitoring of Putah Creek for over 12 years.

The Streamkeeper has documented locations of major trash objects, appliances, vehicles and other “durable goods” as well as dump sites, severely eroding banks, off road vehicle damage, etc., in routine surveys of the creek conducted monthly.

b) Effect of Completed Assessments on Current Objectives, and Basic Assumptions

Previous studies have documented the general extent of invasive plants, especially *Arundo*, *Tamarisk*, *Ailanthus* and *Eucalyptus* and defined gaps in the riparian corridor that are likely to impede migration of wildlife. Diversity studies have shown that Putah Creek is a remarkably diverse fishery hosting a large number of both warm water and cold water species. Although Putah Creek also provides some of the best remaining wildlife habitat in Solano and Yolo counties, the representation of herps and amphibians is somewhat less than that found in comparable streams.

The history of Putah Creek as a flood control channel includes periods of complete vegetation removal as recently as the 1950s. The lack of large cottonwoods along much of the creek is testament to this previous policy.

The creation of a new gravel bar, e.g. the low water crossing on the Hasbrook property, incidentally produced extraordinary spawning habitat for lampreys illustrating the potential to create new anadromous fish spawning habitat. Salmon have also been known to spawn in Putah Creek especially in wet years.

The restoration of habitat diversity and continuity of riparian corridors along Putah Creek through the control of exotic vegetation and replanting of diverse vegetation communities should do much to restore biological diversity by providing native vegetation on which native species depend.

c) Underlying Scientific Assumptions

The following assumptions are widely held by the scientific community and stakeholders as they relate to Putah Creek:

- invasive non-native species often displace native species
- many invasive non-native species are favored by lack of natural predators, disease, etc. and tend to dominate landscapes
- several species are limited by the diminishing availability of large contiguous habitats
- wide riparian woodland corridors support higher bird diversity than narrow riparian woodland strips
- plant community diversity and structure promote wildlife species diversity
- habitat continuity is enhanced by movement corridors
- movement corridors facilitate recolonization after locally catastrophic events (e.g. disease, food shortage) that reduce wildlife populations
- more favorable and/or abundant habitat supports more numbers of a given species
- barriers to fish passage reduce reproductive success
- water temperature affects the distribution of fish
- erosion increases sedimentation
- sedimentation reduces fish spawning success

- overall, cold water favors native fish in Putah Creek
- high oxygen content improves survival of young fish
- fish of the same age in the Yolo Bypass grow three times faster than fish in the Sacramento River
- Arundo and tamarisk infestations in channel often increase lateral erosion
- trash problems are worse near roads
- off road vehicles are not stopped by simple fences

d) Consistency With Scientific Assumptions

The proposed actions are largely consistent with scientific assumptions and previous assessments, however, adaptive management strategies will be used to refine ongoing strategies. Many problems such as stopping illegal dumping and off-road vehicle use depend on human behaviors under local conditions. A combination of strategies may be required to achieve effective reductions in destructive behavior.

e) Baseline Knowledge Used to Support Management Actions

Previously published reports, expert advice, and field visits by the Putah Creek Streamkeeper, comments from local landowners and restoration ecologists were used to develop management actions that would be implemented under this proposal. Data needs were determined through careful analysis of previous assessment efforts. Analysis of current low altitude, high resolution, color aerial photographs will provide more robust and current baseline knowledge.

7. Addressing CALFED Objectives

The proposed project is consistent with CALFED's goals and objectives as described below.

A1. Water Supply Reliability

Putah Creek is a model to showcase how watersheds can achieve agreement on minimum creek flows balancing municipal, agricultural and fisheries water demands. In May, 2000, after 10 years of litigation, a Settlement Agreement (see www.putahcreek.org) was reached among water users and environmental plaintiffs wherein Putah Creek has guaranteed minimum flows for at least 20 years, renewable, essentially in perpetuity with community oversight of watershed management and a permanent Streamkeeper. Water users benefit by resolving regulatory issues, decreasing risk of legal challenges over water use.

A2. Water Quality

Putah Creek has overall good water quality, but it has levels of mercury that can accumulate in certain fish at levels that could pose risks to pregnant women. In the winter months it is laden with sediments from unstable banks aggravated by Arundo. Putah Creek has numerous unprotected culverts, many filled with trash in makeshift efforts to combat soil erosion. Illegal dumping is rampant with evidence of industrial, agricultural and municipal wastes, chemical drums, submerged vehicles, countless tires, appliances, furniture, etc. The incised channel is littered with trash in many places, especially where the county roads approach the creek. In many places these sites resemble small landfills. Agricultural dumping especially of walnut processing wastes has periodically made the creek run black. All of these problems would be assessed and systematically combated through an Internet based information system (see www.putahcreek.org). The abatement of invasive weeds in the watershed and the re-establishment of a continuous riparian corridor will provide lasting water quality benefits by creating a perpetual vegetation filter to airborne pollutants. Instream and riparian habitat restoration will also minimize erosion, increase percolation, and minimize runoff.

A3. Ecosystem Quality

Putah Creek is an amazingly rich fishery in numbers of species with both cold water and warm water species represented. The creek corridor is still scarred from the 1950s when all vegetation was periodically removed. Many invasive species have begun to dominate the landscape in certain areas. Arundo, Tamarisk, Eucalyptus and Ailanthus are present in large numbers and numerous locations. Putah Creek hosts many protected species including Swainson's hawks, valley elderberry longhorn beetle, southwestern pond turtles and possibly steelhead. The riparian corridor has significant vegetation gaps that impede migration of wildlife. This proposal will result in a budget and full documentation of locations and extent of problem species and restoration opportunities and begin prioritized restoration projects with willing landowners (many identified already).

A4. Levee System Integrity

Putah Creek has approximately 30 miles of levees. Levee integrity has not generally been a problem on Putah Creek. We will coordinate with DWR concerning levee maintenance and ecological goals.

These objectives will be pursued in ways that reduce conflict in the system and that are equitable, solving problems in all problem areas. We will pursue affordable solutions that are durable politically and economically, that are ready to implement and that do not result in significant redirected impacts.

The use of Internet databases for all data gathering will promote collaboration through instantaneous data access, and integration among watershed efforts with the potential to rapidly ramp up successful internet database applications for use by other watersheds and even on a statewide scale.

B. Defining and Illustrating Relationships Between Watershed Processes, Watershed Management, and the Primary Goals and Objectives of CALFED

The proposal will result in GIS databases that make apparent key relationships such as Arundo infestations and landowners who support control of the plant. Instantaneously shared information will allow riparian water users to coordinate their

water use allowing needs to be met most efficiently. Flood control will be balanced against restoration plantings. Habitat diversity will be encouraged. Landowner needs will be accommodated to the fullest extent possible and in no case will private property be trespassed. All decisions will be made in public in accordance with the Brown Act. Public comment will be welcomed at monthly LPCCC meetings as well as in the stewardship planning component.

C. Environmental Compliance

CEQA/NEPA

The Solano County Water Agency will serve as the lead agency under CEQA. The watershed assessment and WMAP development phase are categorically exempt under CEQA. An Initial Study/Mitigated Negative Declaration will be prepared for the implementation projects proposed during Phase III. This document will be consistent with the certified CALFED EIR and Record of Decision (<http://baydeltawatershed.org>) and mitigation measure will be consistent with those identified in these documents. No NEPA compliance will be needed for this project. Funding for complying with CEQA have been included in the budget.

Permits

The proposed implementation projects will require a variety of permits, including a grading permit, a streambed alteration agreement from the California Department of Fish and Game, a Clean Water Act Section 404 Nationwide permit from the U.S. Army Corps of Engineers, a Clean Water Act Section 401 Water Quality Certification from the Regional Water Quality Control Board. Funding for obtaining these permits has been included in the budget.

Indian Trust Assets and Environmental Justice

There are no tribal lands along Lower Putah Creek or Pleasants Creek. DQU, a two year tribal college maintains a campus along Yolo County Road 32 between Winters and Davis. The college owns land along a tributary to Dry Slough which drains into Putah Creek. The Streamkeeper is currently investigating opportunities for coordinating restoration efforts with the DQU administration.

The Yolo County Housing Authority in Winters provides Section 8 low income housing and owns several hundred yards of creekfront between Winters and Davis. A representative of the authority has stated interest in stream restoration efforts on their property and the Streamkeeper is currently coordinating efforts.

8. Additional Important Aspects of the Proposed Project – Detailed Description of Proposed Scope of Work

Proposed Scope of Work: The proposed scope of work for completion of the project is divided into administrative and reporting tasks, and tasks associated with the three project phases.

Administration, Reporting and Presentations:

Task A-1: Administration. Project administration and oversight will be provided by the Putah Creek Streamkeeper. The Streamkeeper will also provide guidance to subcontractors, keep detailed records on subcontracts, set up meetings as necessary, and provide any other task necessary to facilitate the implementation of the proposed project.

Task A-2: Reporting and Presentations. This task includes quarterly progress reports, a draft final and final project report and at least one final presentation to CALFED. Preparation of all reports will be overseen by the Streamkeeper and the Streamkeeper or his designee will give the presentation.

Deliverables for Tasks A (1-2): Records of contracts; meeting minutes; quarterly, draft and final reports; and a final presentation.

Phase I: Watershed Stewardship Program - Stakeholder Organizing and Facilitation:

Task PI-1: Organize Stakeholders, Conduct Meetings, and Identify Issues and Solutions in Lower Putah Creek Watershed, Including Pleasants Creek. The LPCCC will continue a stakeholder facilitation program for lower Putah Creek and develop stakeholder organizing and facilitation in the Pleasants Creek tributary watershed to enable all stakeholders to guide and consider information from the Phase II comprehensive resource assessment as a basis for discussion of the watershed's problems, restoration needs, and solutions. Information will be made available to all interested public parties through a web site, newsletters, press releases, technical memoranda, email, and other venues. Meetings will be held every two months to discuss and resolve technical, economic, and regulatory issues, identify problems and restoration needs, and to create mutually beneficial solutions by and for stakeholders.

Deliverables for Task PI-1: Identification of problems, restoration needs and watershed management actions and solutions for incorporation into WMAP.

Phase II: Comprehensive Physical and Biological Resource Assessment and Watershed Management Action Plan Development.

Task PII-1: Map and Assess Fish Habitat. Resident and anadromous fish habitat quality and restoration opportunities will be assessed through standard methods for evaluating instream and overhead shaded riverine aquatic (SRA) cover and mapping of pools, riffles, and runs to determine restoration needs and opportunities. Temperatures will be monitored to improve existing temperature models and provide feedback on the timing of flow releases from Lake Solano. Lake Solano sediment accumulations will be evaluated by review of the existing Lake Solano bathymetry analysis and field determination of gravel sources to determine their potential to enhance gravel substrates in the sediment-starved lower Putah Creek. This task will be augmented by an assessment of potential salmon spawning sites (i.e. gravel quality and depth) funded directly by the LPCCC, and will add to other existing Putah Creek fish studies by Dr. Peter Moyle and students at UC Davis.

Task PII-2: Map and Assess Invasive Weeds and Develop Weed Abatement Plan for Inclusion in WMAP. Invasive weeds in the watershed will be mapped using high resolution, color aerial photographs timed to show distinct weed signatures. Based on the distribution and source of invasive weeds and their threats to watershed resources, a Weed Abatement Plan will be developed that prioritizes abatement and restoration actions for infested areas. Planning for weed removal will be coordinated with upper Putah Creek groups to minimize reinfestations and maximize long-term successful weed control. Major weeds include Arundo, tamarisk, tree-of-heaven [*Ailanthus altissima*], eucalyptus [*Eucalyptus globulus*], and others. This task will be augmented by the CALFED-funded Arundo abatement project with Team Arundo del Norte.

Task PII-3: Identify and Assess Water Quality Issues and Map Sources of Pollution and Trash Sites. The water quality assessment will be developed in collaboration with the Regional Water Quality Control Board (RWQCB) and will build on previous assessments. Trash (i.e., vehicles, tires, appliances, illegal dumping sites) will be mapped to complete the assessment conducted by the Streamkeeper, Solano County Department of Environmental Management and others.

Task PII-4: Map and Assess Erosion Problem Areas. Areas with substantial erosion problems (i.e., lateral bank loss, headcutting, downcutting) will be identified and mapped and the underlying causes for the erosion will be assessed. Feasible solutions will be determined, with an emphasis on natural solutions (e.g., biotechnical revetment) appropriate to the site conditions and the underlying causes of the problem.

Task PII-5: Map and Assess Vegetation Communities, Associated Wildlife Habitat, and Sensitive Resources. Vegetation community, associated wildlife habitat, and sensitive resource (special-status species, sensitive communities) mapping and assessment will be conducted by field surveys and aerial photograph interpretation using photographs recently commissioned by SCWA and the LPCCC. Data will be compared with results from previous studies.

Task PII-6: Develop Watershed Management Action Plan (WMAP). The WMAP will be the core element of Phase II. It will be developed through the integration of stakeholder input and the watershed resource assessment. The WMAP will identify opportunities and constraints within the watershed, and provide the baseline data for future projects to be implemented during Phase III. WMAP development will benefit, to the extent feasible, on the use of existing models and watershed planning tools, resources, and approaches as provided by other organizations (e.g., Sierra Nevada Alliance Guide). The WMAP will quantitatively and qualitatively describe natural resource conditions within the watershed; provide interactive internet-accessible maps of resources and implementation projects; and provide methods for achieving and sustaining water quality, ecosystem restoration, and other watershed improvements consistent with CALFED goals and objectives, the CALFED programmatic EIR and Record of Decision (<http://baydeltawatershed.org>), and the *Plan for California's Nonpoint Source Pollution Control Program*. It will also provide a baseline for monitoring watershed changes and project performance; describe a monitoring program and provide success criteria for watershed improvements; provide a prioritized list of restoration needs and locations; and provide timelines and cost estimates for future management actions.

Deliverables for Task PII (1-6): Detailed internet-accessible resource maps, resource-specific databases, photographs and summary technical reports, Weed Abatement Plan, and the draft and final Watershed Management Action Plan (WMAP) produced in hard copy and posted on the Putah Creek web site.

Phase III: Implementation of Urgent Watershed Management Actions and Further Development of Existing Projects. Restoration and enhancement actions that will be implemented immediately under Phase III include:

Task PIII-1: Fish Habitat Enhancement Pilot Project. Instream structures (e.g. boulders, tree limbs) will be placed in various locations along the creek on the properties of willing landowners and in coordination with the resource agencies, including any required permits. The project will be evaluated to determine which types and locations of instream SRA cover increase fish population densities.

Task PIII-2: Weed Abatement and Streambank Stabilization. Invasive weed infestations will be treated and removed and eroding streambanks will be stabilized using techniques appropriate to the site conditions. These will include combinations of grading, protective berm construction, and biorevetment/habitat restoration techniques. All necessary environmental documentation, permits and approvals will be obtained prior to construction. Anticipated documentation and permits include an initial study (negative declaration) under CEQA, a CDFG Streambed Alteration Agreement, and a Section 404 permit from the US Army Corps of Engineers.

Task PIII-3: Develop Adopt-A-Reach Community Stewardship Program. The Adopt-A-Reach program is now in its third year. Over 200 individuals have volunteered over 4,000 hours planting, maintaining and monitoring a 7-acre riparian woodland restoration site on the UC Davis Putah Creek Riparian Reserve. The volunteers participate in testing new restoration methods to improve techniques and reduce costs. The existing Adopt-A-Reach program will be further developed and strengthened to better enable individuals, school classes and community groups to volunteer for the restoration, enhancement and protection of Putah Creek's natural resources. Presentations and reports will be produced to educate and inspire other groups to develop similar programs in their watershed.

Task PIII-4: Develop Wildlife Enhancement Project. This project will build on the LPCCC Wildlife Monitoring Program to develop habitat creation and enhancement measures that benefit sensitive and/or declining wildlife species. An important element of this project will be the continuation and expansion of the Putah Creek Nestbox Trail, established in spring 2000. This trail comprises over 175 individual nest boxes, specially designed to meet the requirements of native cavity nesting species while excluding the European Starling, a major nest competitor. While the trail is currently contributing to ongoing conservation and research into the ecology and demography of small cavity nesting birds in the Central Valley, it also contributes to environmental education and outreach. Local individuals and organizations have become involved in nest box construction and monitoring, increasing their appreciation and protection of the Putah Creek ecosystem and of "their birds." The program will be expanded to include additional nest box sites, monitoring, and involvement of new volunteers. Presentations and reports will be produced to educate and inspire other groups to develop similar programs.

Task PIII-5: Develop Cleanup Program. The program will be expanded to enable cleanup of over ten automobiles and numerous appliances and other objects, installation of fencing or other deterrents in areas where most illegal dumping takes place, involvement of new volunteers, and cleanup of additional sites. The program will assist and build on the CALFED-funded vehicle abatement work begun by the Solano County Dept. of Environmental Management, and annual spring and fall cleanups by volunteers sponsored by local and regional groups.

Deliverables for Task PIII (1-5): Report and presentations on the success and findings of each program; improved wildlife habitat; enhanced sense of stewardship; several tons of trash recycled and dumped at the landfill and a cleaner creek; regular workdays, participation of up to hundreds of volunteers, and restoration of over 7 acres of riparian woodland; removal of weed infestations and stabilized banks; environmental compliance documentation, permits and approvals.

Table 1: CALFED WATERSHED PROGRAM BUDGET AND PROJECT SUMMARY

Task Number	Task Description	Completion date in months	Match funds	CALFED funds	Total
Task A-1	Project Oversight and Administration:		\$60,000	\$35,000	\$95,000
Task A-1-1	Creation of Internet accessible databases and GIS databases, map server software (\$10,000), consulting 170 @ \$100/hour, plotter (\$13,000), labor 1,370 @ \$40/hr)	0-12	\$60,000	\$30,000	\$90,000
Task A-1-2	Advisory group meetings, workshops, supplies and refreshments for 12 meetings	0-36	\$0	\$5,000	\$5,000
Task A-2	Reporting and Presentations		\$11,000	\$45,800	\$56,800
Task A-2-1:	Quarterly progress reports: Progress reports on project implementation, including financial status, milestones reached, products completed, and general assessment of overall progress, including problems encountered or anticipated. 40 @ \$75/hr x 12 reports	0-36	\$6,000	\$30,000	\$36,000
Task A-2-2	Draft final report: Draft report summarizing the project implementation, achievements, product deliveries, financial status. To be sent to the Contract Manager for review and comment. 100 @ \$80/hr	33	\$2,000	\$6,000	\$8,000
Task A-2-3:	Final report: Revised report incorporating comments from the Contract Manager and others. 20 @ \$80/hr	36	\$600	\$1,000	\$1,600

		Completion date in months	Match funds	CALFED funds	Total
Task A-2-4:	Presentations: Delivering at least one final summary presentation to CALFED. 80@\$80/hr	36	\$2,400	\$4,000	\$6,400
	Report Production 50@\$80/hr, materials	36	\$0	\$4,800	\$4,800
	Task Product(s): Deliverables include Internet accessible databases, GIS databases, minutes of advisory group meetings, reports and presentations				
	Success Criteria: Stewardship Plan, access agreements. Progress will be noted in quarterly reports and current data can be reported via Internet database reports at any time.				
Task P1:	Phase I: Watershed Stewardship Program- Stakeholder Organizing and Facilitation		\$10,000	\$100,000	\$110,000
Task PI-1	Organize Stakeholders and Conduct Meetings 575@100/hr, 10 @ \$5000/ meeting	0-18	\$10,000	\$100,000	\$110,000
	Task Product(s): Deliverables include a Stewardship plan for Pleasants Creek and Landowner access agreements for Pleasants Creek and Mainstem Putah Creek				
	Success Criteria: Progress will be noted in quarterly reports				
Task P2:	Phase II: Comprehensive Physical and Biological Resource Assessment and Watershed Management Action Plan (WMAP)		\$134,705	\$216,890	\$351,595
	Direct costs for GPS equipment - 2 Pro XRS	0-6	\$0	\$31,945	\$31,945

		Completion date in months	Match funds	CALFED funds	Total
Task PII-1	Map and Assess Fish Habitat , interpret aerial images, create GIS layers, 100@\$85/hr; ground truth 150@\$75/hr, report 60@\$75/hr, Lake Solano Sediment Evaluation 40@\$100/hr, temperature monitoring 40@\$85/hr, hobo temps data loggers \$1300, contracted studies \$110,000	0-24	\$110,000	\$33,950	\$143,950
Task PII-2	Map and Assess Invasive Weeds and Develop Weed Abatement Plan for Inclusion in WMAP , interpret aerial photos and create GIS layers 100@\$85/hr, ground truth 570@ \$75/hr, production 60@\$75/hr, WMAP development \$25,000.	0-36	\$8,205	\$72,545	\$80,750
Task PII-3	Identify and Assess Water Quality Issues, Map Sources of Pollution and Trash Sites , interpret aerial photos and create GIS layers 100@\$85/hr, ground truth 150@\$75/hr, production 60@\$75/hr.	0-36	\$2,500	\$20,050	\$22,550
Task PII-4	Map and Assess Erosion Problem Areas , interpret aerial photos and create GIS layers 40@\$85/hr, ground truth 150@\$75/hr, report 60@\$75/hr	0-24	\$4,000	\$15,150	\$19,150
Task PII-5	Map and Assess Vegetation Communities, Associated Wildlife Habitat and Sensitive Resources interpret aerial photos and create GIS layers 200@\$85/hr, ground truth 150@\$75/hr, production/report 60@\$75/hr	0-24	\$5,000	\$23,250	\$28,250
Task PII-6	Develop Watershed Management Action Plan (WMAP)	0-36	\$5,000	\$20,000	<u>\$25,000</u>
	Task Product(s): watershed management action plan, GIS layers, interim reports				
	Success Criteria: Interim reports, GIS layers				

		Completion date in months	Match funds	CALFED funds	Total
Task 3:	Phase III: Implementation of Urgent Watershed Management Actions and Further Development of Existing Projects		\$202,320	\$457,310	\$659,630
Task PIII-1	Fish Habitat enhancement pilot project , create instream cover 20@\$200/hr equipment and operator, \$3000 for materials, evaluate effects 60@\$100/hr, 75@\$25/hr, permits \$5,000, report 80@\$25/hr	0-36	\$10,000	\$11,875	\$21,875
Task PIII-2	Weed abatement and streambank stabilization , grading and berms 24@\$175/hr equipment and operator, 7 sites at two locations, 100'x15' biorevetment @ \$15 per sq ft, environmental permits and documentation* \$35,000, weed removal by machine 80@\$175/hr, weed removal by hand crews 1200@\$30/hr, herbicide treatment 300@\$30/hr, herbicides and equipment, \$2,000, monitoring 50@\$85/hr, reporting 60@\$80/hr	0-36	\$30,000	\$219,775	\$249,775
Task PIII-3	Adopt-A-Reach Community Stewardship manager 420@\$100/hr, interns 4500@\$15/hr, analysis, reporting, presentations, 300@\$25/hr, signage \$3,000, supplies, plants, tools and refreshments, \$48,000, volunteers 4,000@\$15/hr	0-36	\$60,000	\$168,000	\$228,000
Task PIII-4	Wildlife Enhancement Project : build nest boxes \$2,000, install nest boxes 140@\$20/hr, monitoring 144@\$35/hr, interns 288 @ \$15/hr, report 100@\$30/hr, volunteers 2302@\$15/hr	0-36	\$57,320	\$22,760	\$80,080
Task PIII-5	Cleanup Program :3 locations, twice per year, three years, volunteers 3000 @ \$15/hr, refreshments \$2,700, supplies \$2,700, , vehicle/appliance removal \$5,000, barriers \$20,000, volunteers 3000@\$15/hr, removal of 10 vehicles/large appliances from channel	0-36	\$45,000	\$34,900	\$79,900
Task Product(s): Specific programs					
Success Criteria: Interim Reports, Internet databases					
Total			\$418,025	\$855,000	\$1,273,025

*Permits

CEQA (initial study mitigated negative declaration)	12	\$20,000	\$20,000
404 permit	12	\$6,000	\$6,000
401 clean water cert	12	\$4,000	\$4,000
Section 1600 Streambed alteration agreement	12	\$5,000	\$5,000